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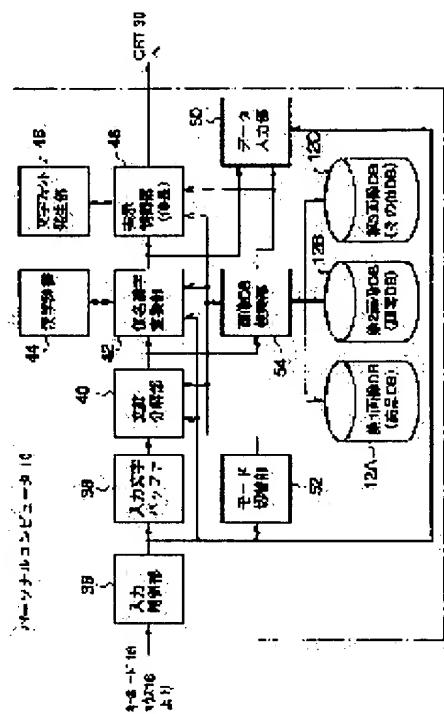
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(54) IMAGE RETRIEVAL DISPLAY DEVICE AND KANA/KANJI CONVERTING DEVICE

**(57)Abstract:**

**PURPOSE:** To refer to and display the image of an image database by the same operation as a character input operation in an application program such as a word processor, etc.

**CONSTITUTION:** Merchandise information including compression image data of a merchandise, which is photographed by a digital still camera, etc., is stored in a first image DB12A. When a character string is inputted from a keyboard, a paragraph analyzing part 40 analyzes it into character strings in paragraph unit and issues it as retrieval key information. An image DB retrieving part 54 retrieves the first image DB14A by the retrieval key information, expands image data which was retrieved by a display control part 46 at a high speed and displays it in CRT30.



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## CLAIMS

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## [Claim(s)]

[Claim 1] A storage means to memorize the image database which accumulated the natural image, and a character string input means to input a character string, A clause decomposition means to decompose into the character string of a clause unit the character string inputted by said character string input means, A search key information issuance means to publish the character string of each clause unit decomposed by said clause decomposition means as search key information, The image retrieval display characterized by providing a retrieval means to search the image database memorized by said storage means using the search key information published with said search key information issuance means, and an image display means to display the image searched with said retrieval means.

[Claim 2] A character string input means to input a character string, and a clause decomposition means to decompose into the character string of a clause unit the character string inputted by said character string input means, When said 1st mode is specified by the mode assignment means which carries out change assignment of the 1st mode in which the usual conversion of kana into kanji is performed, and the 2nd mode in which search key information is published, and said mode assignment means, A conversion-of-kana-into-kanji means to change into a sentence mixing kanji, kana and characters the character string of each clause unit decomposed by said clause decomposition means with reference to a kanji dictionary, When said 2nd mode is specified by input means to input into a document the kana kanji mixture sentence changed by said conversion-of-kana-into-kanji means, and said mode assignment means, The kana kanji inverter characterized by providing a search key information issuance means to publish the character string of each clause unit decomposed with said clause decomposition means as search key information on an image database.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the kana kanji inverter used for the image retrieval display and it which indicate the image by retrieval from an image database.

[0002]

[Description of the Prior Art] Storing various data and building various databases conventionally, using a personal computer etc., is performed. There is image database system which comes to accumulate many natural image data obtained with image data, especially a digital still camera, etc. to one of them. In such image database system, an image can be searched and displayed by inputting various search key information.

[0003] Moreover, the application program called the graphic software which creates an image, edits and is managed is also known for the personal computer as a thing treating such image data.

[0004] On the other hand, in various operation, they are a word processor and a spreadsheet (spreadsheet) as an application program usually used with the personal computer.

[0005] By the way, in the above application programs, in order to input the kanji, the special program called the conversion-of-kana-into-kanji software which can be used in common with each application program is used. In this conversion-of-kana-into-kanji software, the inputted kana character string is usually decomposed into a clause, and each clause is changed into a kana kanji mixture sentence with reference to a kanji dictionary.

[0006]

[Problem(s) to be Solved by the Invention] However, in the above image database system, in order to input the above-mentioned search key information, in the search key information input screen of dedication, search key information had to be specified in detail, and the operator needed to memorize the actuation. That is, since different actuation from actuation of the usually used word processor was required, there were many operators who hesitate to use image database system (database application program).

[0007] Moreover, while performing application programs, such as a word processor, actuation of starting a graphic software separately, sticking a desired image on an aperture and sticking it on the request location of a document in preparation with a word processor by predetermined copy actuation was required to put in an image into the document currently drawn up. Furthermore, in order to find by what kind of identifier it memorizes where a desired image is, application programs, such as an image database, might also have to start and the image might have to be searched here.

[0008] This invention was made in view of the above-mentioned point, and aims at being made to indicate the image of image database system in the alphabetic character alter operation in applications, such as a word processor, and the same actuation by reference.

[0009] Moreover, this invention aims at enabling it to stick image data simply during application program activation of a word processor etc., without starting application programs, such as a graphic software different from it, and performing complicated actuation.

[0010]

[Means for Solving the Problem] In order to attain the above-mentioned object, the image retrieval display by this invention A storage means to memorize the image database which accumulated the natural image, and a character string input means to input a character string, A clause decomposition means to decompose into the character string of a clause unit the character string inputted by said character string input means, A search key information issuance means to publish the character string of each clause unit decomposed by said clause decomposition means as search key information, It is characterized by providing a retrieval means to search the image database memorized by said storage means using the search key information published with said search key information issuance means, and an image

display means to display the image searched with said retrieval means.

[0011] Moreover, a character string input means by which the kana kanji inverter by this invention inputs a character string, A clause decomposition means to decompose into the character string of a clause unit the character string inputted by said character string input means, When said 1st mode is specified by the mode assignment means which carries out change assignment of the 1st mode in which the usual conversion of kana into kanji is performed, and the 2nd mode in which search key information is published, and said mode assignment means, A conversion-of-kana-into-kanji means to change into a sentence mixing kanji, kana and characters the character string of each clause unit decomposed by said clause decomposition means with reference to a kanji dictionary, When said 2nd mode is specified by input means to input into a document the kana kanji mixture sentence changed by said conversion-of-kana-into-kanji means, and said mode assignment means, It is characterized by providing a search key information issuance means to publish the character string of each clause unit decomposed with said clause decomposition means as search key information on an image database.

[0012]

[Function] That is, according to the image retrieval display of this invention, if a character string is inputted by the character string input means, a clause decomposition means will decompose this inputted character string into the character string of a clause unit, and a search key information issuance means will publish this as search key information. And a retrieval means searches the image database which accumulated the natural image memorized by the storage means using this search key information, and expresses the searched image as an image display means.

[0013] Moreover, if the 2nd mode in which search key information is published with an assignment means is specified according to the kana kanji inverter of this invention, the character string inputted by the clause decomposition means will be decomposed into the character string of a clause unit, and a search key information issuance means will publish each character string of this clause unit as search key information on an image database.

[0014]

[Example] Hereafter, the example of this invention is explained with reference to a drawing. drawing 2 -- this invention -- the -- one -- an example -- applying -- having had -- a computer system -- a configuration -- being shown -- drawing -- it is -- an image database -- (DB) -- a personal computer -- ten -- building -- having had -- a hard disk -- (HD) -- 12 -- building -- having . The memory card drive 14, a keyboard 16, a mouse 18, an image reader 20, CD-ROM drive 22, the magneto-optic-disk (MO) drive 24, the floppy disk (FD) drive 26, a printer 28, and CRT30 grade are connected to this personal computer 10 as input/output equipment.

[0015] Here, image data is inputted by the image input device of the memory card drive 14, an image reader 20, CD-ROM drive 22, MO drive 24, and FD drive 26 grade as an image file, and is accumulated in a hard disk 12. In addition, the memory card drive 14 reads the image data photoed with the digital still camera 34 recorded on the memory card 32, and inputs it into a personal computer 10.

[0016] Since it is already well known about the technique of building Image DB from the image file inputted from such an image input device, the explanation is omitted here. However, since image data serves as the big amount of data, respectively, compression of JPEG etc. shall be performed and memorized. Moreover, the cutback image is memorized with this compression image, and when a high-speed display is desired, this cutback image is displayed, and when to see details is desired, utilization of elongating and displaying a compression image becomes possible.

[0017] In such a computer system, drawing 1 is the functional block diagram of the conversion-of-kana-into-kanji software performed on a personal computer 10, while performing application programs, such as a word processor and a spreadsheet.

[0018] That is, the input-control section 36 receives the input manipulate signal by the above-mentioned keyboard 16 or the mouse 18, and identifies whether it is the change input in that the alter operation is the input of a character string, or they are control inputs, such as definite actuation and selection actuation, or the mode.

[0019] And if it is a character string input, the input-control section 36 stores the inputted kana character string in the input-statement character buffer 38. The clause decomposition section 40 decomposes into a clause the kana character string stored in this input-statement character buffer 38, and passes it to the kana kanji converter 42. The kana kanji converter 42 changes the inputted character string of a clause unit into a kana kanji mixture sentence with reference to the kanji dictionary 44, and inputs this into a display and control section 46. A display and control section 46 changes the inputted kana kanji mixture sentence into bit map data with reference to the character-font generating section 48, and it carries out a display output to CRT30.

[0020] And when the kana kanji mixture sentence displayed on CRT30 is the thing of a user request, a definite actuation input is made. If the input-control section 36 identifies this definite actuation, the data input section 50 will be told about that, and, in response, the data input section 50 will pass the conversion result of the kana kanji converter 42 to

application programs, such as a word processor. In the case of a word processor, it stores in the document memory whose kana kanji mixture sentence inputted in this way is not illustrated.

[0021] On the other hand, when the displayed kana kanji mixture sentence is user a non-wanted thing, control inputs, such as a next candidate demand and a clause break repair demand, are made. The input-control section 36 identifies it, and the next candidate is made to output to the kana kanji converter 42, or it carries out break repair of a clause to the clause decomposition section 40.

[0022] Moreover, when a mode change input is made, the input-control section 36 makes the mode change actuation according to the input perform in the mode change section 52. That is, the mode change section 52 controls the clause decomposition section 40 and the kana kanji converter 42 according to the inputted kana kanji translation mode. For example, as this kana kanji translation mode, as a conversion method, each mode multiple-clauses conversion, automatic conversion, compound precedence conversion, and in which it does not change can be chosen now, and each mode of a full-size hiragana input, a full-size katakana input, a full-size alphanumeric input, a half-width katakana input, and a half-width alphanumeric input can be chosen now as an input method. As for these mode change directions, it is common that carry out click actuation of the change carbon button displayed on the display screen of CRT30 with a mouse 18, or depressions, such as a predetermined function key of a keyboard 16, perform.

[0023] By this invention, although it is the function of common conversion-of-kana-into-kanji software, it can reference-display, or can stick and the above can carry out the image meant or it is related from Image DB, while performing application programs, such as a word processor, as shown in (A) of drawing 3 .

[0024] That is, two or more images 12A, 12B, and DB 12C are built by HD12. For example, 1st image DB12A is the goods DB which accumulated the information about goods, 2nd image DB12B is the customer DB who accumulated the information about a customer, and 3rd image DB12C is DB accumulated about the information on other. And by making into search key information the kana character string of the clause unit decomposed by the above-mentioned clause decomposition section 40, the image DB retrieval section 54 searches these images 12A-DB 12C using the search key information on these plurality, and passes the obtained image data to a display and control section 46, respectively. Here, since image data is given and compression of JPEG etc. is memorized by Images 12A-DB 12C as mentioned above, the display and control section 46 equips them with the function which elongates this at a high speed and is displayed on CRT30.

[0025] In such the image DB retrieval section 54, the change of which image DB to make applicable [ DB ] to retrieval is determined according to control of the mode change section 52, i.e., the mode assignment input by the user.

[0026] That is, when image transformation mode is directed by predetermined actuation, for example, the click of a mode change carbon button and the depression of a function key, the input-control section 36 identifies it and image transformation mode is made to change it to the mode change section 52 in the usual kana kanji translation mode. In this image transformation mode, as shown in (A) of drawing 3 , the carbon button 56 for a mode change is displayed on display screen 30A of CRT30, and as shown in drawing 4 , the mode is changed still more finely by clicking this with a mouse 18. Of course, predetermined function key actuation of a keyboard 16 can also perform this change now.

[0027] whenever carbon button 56A is a change carbon button for retrieval and it clicks here -- 1st image DB(goods image DB)12A-> 2nd image DB(customer DB) 12B -- -> 3rd image DB(in addition to this DB)12C-> 1st image DB12A->-- as -- it changes cyclically. Moreover, according to this change, it changes and the display of this change carbon button 56for retrieval A is also displayed so that that mode may be indicated to be "dealer" ->--. [ in "quotient" -> "visitor" -> "drawing" -> ] In addition, this carbon button 56A functions as a hiragana / katakana / an alphanumeric change carbon button in the above-mentioned kana kanji translation mode.

[0028] Similarly, whenever means-of-displaying change carbon button 56B also carries out a mouse click, like whole whole display -> smallness image display -> thumbnail display -> display ->-- , it is changed cyclically, and also changes the display to "\*\*\*" -> "smallness" -> "sum" -> "\*\*\*" ->-- , and is displayed. It is a thing in the condition of displaying every one sheet of each image with which the whole display was searched here in each size, small image display is in the condition of displaying the image reduced to one fourth beside four sheet side by side, and a thumbnail display is in the condition of carrying out the 4x4-sheet matrix display of the image reduced to the pan of 1 / 16 grades, for example. In addition, this carbon button 56B functions as full width / a half-width change carbon button in the above-mentioned kana kanji translation mode.

[0029] moreover -- whenever conversion method change carbon button 56C carries out a mouse click -- illustration conversion -> text input conversion -> item dialogue input conversion -> illustration conversion ->-- as -- it changes cyclically -- having -- moreover, the display -- -- putting -- obtaining -- " -- -> "text" ->"item dialogue" -> -- " -- it can put, and it changes to"-->-- and is displayed.

[0030] Here, illustration conversion is a conversion method changed into the image of the illustration level like an

illustration instead of natural images, such as a photograph inputted by the image input device of the above-mentioned memory card drive 14, an image reader 20, CD-ROM drive 22, MO drive 24, and FD drive 26 grade. That is, it changes into an image like the illustration of the sexagenary cycle inserted in a New Year's card. In this case, although the image of this illustration level may be memorized to 3rd image DB(that image DB)12C, it can be beforehand stored in the kanji dictionary 44 as an initial image.

[0031] Moreover, text input conversion is the conversion method which is changed into the natural image of a red skirt board in inputting as a text like "a dirt chair or -." That is, if "dirt chair or -" input as well as the usual conversion of kana into kanji is carried out in this case, it will be decomposed into "\*\*\*\*\*", and "\*\* or -" in the clause decomposition section 40, and these will be passed to the image DB retrieval section 54 as search key information, for example, the image of a red skirt board will be searched from 1st image DB(goods DB) 12A, and it will be displayed on CRT30.

[0032] Moreover, item dialogue input conversion is a method which displays an input window 58 like the retrieval screen in the usual image DB, and inputs search key information into each input field, respectively, as it is used when not well changed by the above-mentioned text input conversion method, and shown in (B) of drawing 3 .

[0033] in addition, this carbon button 56C -- the above-mentioned kana kanji translation mode -- setting -- multiple-clauses conversion -- it functions as /compound precedence conversion / automatic conversion / a non-changed change carbon button. Hereafter, the actuation in such a configuration is explained with reference to the flow chart of drawing 5 .

[0034] That is, if a keyboard 16 and a mouse 18 are operated, it is first distinguished by the input-control section 36 whether the alter operation is the input of a character string (step S10), and if it is a character string input, the kana character string inputted by the clause decomposition section 40 will be decomposed per clause (step S12). And when the kana kanji translation mode is set up by the mode change section 52 as the current mode, by (step S14) and the kana kanji converter 42, it changes into a sentence mixing kanji, kana and characters (step S16), and the conversion result is displayed on CRT30 (step S18). Moreover, when image transformation mode is set up by the mode change section 52 as the current mode, the image DB on HD12 is searched by making into search key information two or more kana character strings decomposed per [ above-mentioned ] clause (step S20), it is obtained by the (step S14) image DB retrieval section 54, and an image is displayed on CRT30 by it (step S22). In addition, a class, means of displaying, etc. of the image DB which serves as an object for retrieval in this case are based on the actuation condition of the above-mentioned mode change carbon button 56.

[0035] Moreover, in the above-mentioned step S10, when alter operation is judged not to be the input of a character string, the input-control section 36 judges next whether it is that the mode or method change alter operation was made (step S24). And if the mode or method change alter operation was made, the mode change section 52 will perform processing changed to the mode or the method according to the alter operation (step S26).

[0036] Moreover, in the above-mentioned step S24, if alter operation is judged not to be the mode or method change alter operation next, the input-control section 36 will judge whether it is that data decision alter operation was made (step S28). And if data decision alter operation was made, the kana kanji mixture sentence or image data currently displayed on current [ CRT / 30 ] will be inputted into an application program by the data input section 50 (step S30).

[0037] In addition, in the above-mentioned step S28, when alter operation is judged not to be data decision alter operation, either, other processings of the corresponding processing, for example, a next candidate demand, cancellation, etc. are performed (step S32).

[0038] By the above actuation, during application program activation of a word processor etc., the image of an image database can be indicated by reference by the usual alphabetic character alter operation and the same actuation, or image data can be easily stuck now.

[0039] For example, in a document as shown in (A) of drawing 3 , since there is [ two kinds of ] "a red skirt board" In order to show what kind of skirt board it is, respectively, when it is going to stick the image, as shown in (A) of drawing 6 Cursor (not shown) is moved to a location to stick the image on. The change actuation to the above-mentioned image transformation mode, In the above-mentioned step S26, it changes to those modes and methods by performing actuation which sets 1st image DB(goods image DB)12A as a retrieval object, actuation which makes means of displaying a small image display method, actuation which makes a conversion method a text input conversion method. Then, if a character string "a dirt chair or -" is keyed and a predetermined conversion key etc. is operated, this character string "a dirt chair or -" will be decomposed into "\*\*\*\*\*", and "\*\* or -" in the above-mentioned step S12, and 1st image DB12A will be searched in the above-mentioned step S20 by making these "\*\*\*\*\*", and "\*\* or -" into search key information. And although expressed as the above-mentioned step S22, since the small image display method is set up as means of displaying in this case, as shown in (B) of drawing 6 , four cutback images of "the red skirt board" applicable to the above-mentioned search key information are displayed. Therefore, by carrying out selection actuation of the cutback

image of the request of them, the selected image is passed to a word processor side in the above-mentioned step S30, and an operator is stuck on the input location of the above-mentioned character string, as shown in (C) of drawing 6 . And actuation of sticking the image of another "red skirt board" as well as the above is performed.

[0040] Moreover, what is necessary is just to perform predetermined undo operation, without performing selection actuation of an image, if it is not necessary to stick an image and you want to only refer to. Next, the 2nd example of this invention is explained.

[0041] Drawing 7 is drawing showing the configuration, and differs from the 1st example which trying to give not the output of the clause decomposition section 40 but the output of the kana kanji converter 42 mentioned above as search key information passed to the image DB retrieval section 54 in this example.

[0042] That is, in the 1st example, although he was trying to give "\*\*\*\*\*", and "\*\* or -" as search key information, for example, since key information is changed into the kanji or katakana and is memorized, be made to let "it is red" and a "skirt board" conversion-of-kana-into-kanji backward [ instead of a hiragana ] be search key information at the usual DB.

[0043] The same effectiveness as the 1st example mentioned above also as such a configuration is acquired. In addition, although explanation of the above-mentioned example explained the case of a word processor to the example, of course in other application programs, such as a spreadsheet, it is applicable similarly.

[0044] Furthermore, cooperation with other databases is also possible. For example, if there are sales DB which accumulated sales information and "the sales best 5" will be inputted, usage of searching these sales DB, searching five goods in order with many sales, searching the image of those goods from the goods image DB, and displaying can also be done.

[0045] moreover -- although the image DB retrieval section 54 was incorporated into conversion-of-kana-into-kanji software in the above-mentioned example -- the thing of database system (application program) usual in this -- using -- conversion-of-kana-into-kanji software -- if -- it may be made to publish search key information to the retrieval section of this database application program. However, in this case, when it changes to image transformation mode, it is required to start a database application program automatically (it is more desirable for a display top not to be visible).

[0046] Although this invention was explained based on the example above, this invention is not limited to the example mentioned above, and deformation and application various by within the limits of the summary of this invention are possible for it. Here, it is as follows when the summary of this invention is summarized.

[0047] (1) A storage means to memorize the image database which accumulated the natural image, A character string input means to input a character string, and a clause decomposition means to decompose into the character string of a clause unit the character string inputted by said character string input means, A search key information issuance means to publish the character string of each clause unit decomposed by said clause decomposition means as search key information, The image retrieval display characterized by providing a retrieval means to search the image database memorized by said storage means using the search key information published with said search key information issuance means, and an image display means to display the image searched with said retrieval means.

[0048] (2) The method assignment means of a display which carries out the selection directions of whether it displays one searched image at a time in case the image searched by said retrieval means is displayed on said image display means, or the reduced image is displayed on two or more sheet coincidence, An image retrieval display given in (1) characterized by providing further the display-control means on which the image searched for said image display means is displayed according to selection directions of said method assignment means of a display.

[0049] (3) Said storage means is an image retrieval display given in (1) characterized by providing further an assignment means for retrieval to specify any of the image database of these plurality are made applicable to retrieval by memorizing two or more image databases which accumulated the image of an object different, respectively.

[0050] (4) It is an image retrieval display given in either [ which possesses further the conversion-of-kana-into-kanji means which carries out the conversion of kana into kanji of the character string of each clause unit decomposed by said clause decomposition means, and is characterized by said search key information issuance means publishing each character string after conversion as search key information with said conversion-of-kana-into-kanji means ] (1) thru/or (3).

[0051] (5) A character string input means to input a character string, and a clause decomposition means to decompose into the character string of a clause unit the character string inputted by said character string input means, When said 1st mode is specified by the mode assignment means which carries out change assignment of the 1st mode in which the usual conversion of kana into kanji is performed, and the 2nd mode in which search key information is published, and said mode assignment means, A conversion-of-kana-into-kanji means to change into a sentence mixing kanji, kana and characters the character string of each clause unit decomposed by said clause decomposition means with reference to a

kanji dictionary, When said 2nd mode is specified by input means to input into a document the kana kanji mixture sentence changed by said conversion-of-kana-into-kanji means, and said mode assignment means, The kana kanji inverter characterized by providing a search key information issuance means to publish the character string of each clause unit decomposed with said clause decomposition means as search key information on an image database.

[0052] (6) It is a kana kanji inverter given in (5) which possesses further an image receiving means to receive the image searched corresponding to the search key information published by said search key information issuance means, and is characterized by said input means inputting a carrier beam image into a document with said image receiving means.

[0053]

[Effect of the Invention] As explained in full detail above, according to this invention, it comes indicate the image of an image database by reference in the alphabetic character alter operation in application programs, such as a word processor and a spreadsheet, and the same actuation. Therefore, even if it does not memorize the operation information of a day base application program, required information can be referred to easily.

[0054] Moreover, according to this invention, image data can be easily stuck during application program activation of a word processor etc., without starting application programs, such as a graphic software different from it, and performing complicated actuation.

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